

A POWERFUL SOURCE OF
ULTRA-VIOLET

For Field or Laboratory Use

Div.55



The **EVEREADY**
TRADE MARKS

FLUORAY

ULTRA-VIOLET LAMP
PORTABLE • LIGHT WEIGHT • STURDY

Used for analysis, inspection, detection and identification
by means of characteristic fluorescent effects

FULL ULTRA-VIOLET INTENSITY IMMEDIATELY AVAILABLE
CAN BE USED ON ANY 115 VOLT CIRCUIT, A.C. OR D.C.
CAN BE USED IN ANY POSITION
SUPPLIED IN ATTRACTIVE CARRYING CASE

607/94

THE EVEREADY FLUORAY

The "EVEREADY FLUORAY" Ultra Violet Lamp is a very convenient, portable carbon arc lamp, suitable for field and laboratory work wherever 115 volt current, either alternating or direct, is available. The arc is entirely enclosed and ultra-violet rays are emitted through a removable filter of special glass which transmits ultra-violet yet screens out all but a trace of the visible light from the arc.

This lamp is built from carefully selected materials, accurately finished and assembled into a sturdy, lightweight unit (approximately 2½ pounds) which will give years of service. Operation of the lamp is simple and inexpensive.

FILTERS

Two filters are offered for use with this lamp, either of which will be supplied at the option of the purchaser.

Heat Resisting

Red Purple Ultra
No. 587

This filter has strong ultra-violet transmission with maximum trans-

mission at approximately 3650 AU. It also transmits a

trace of visible radiation in the extreme violet and the extreme red. This visible light, however, is not of sufficient strength to be disturbing to fluorescence observations in the majority of cases. This is a very durable filter glass with exceptional heat resisting properties. The transmission curve for this filter is shown by the upper left hand figure on the opposite page.

Red Purple

Corex A

No. 986

The value of this filter lies, not only in its unusually high transmission of ultra-violet, but particularly in the large transmission at wave lengths shorter than 3500 AU and

the substantial transmission below 3100 AU. The transmission of visible radiation is similar to that of the No. 587 filter, a trace in the extreme violet and extreme red. This glass is not as durable nor as resistant to breakage from heat as the No. 587 glass but is of value in the examination of materials which show characteristic fluorescence in response to wave lengths shorter than 3100 AU. The transmission of this filter is shown by the lower left hand figure on the opposite page.

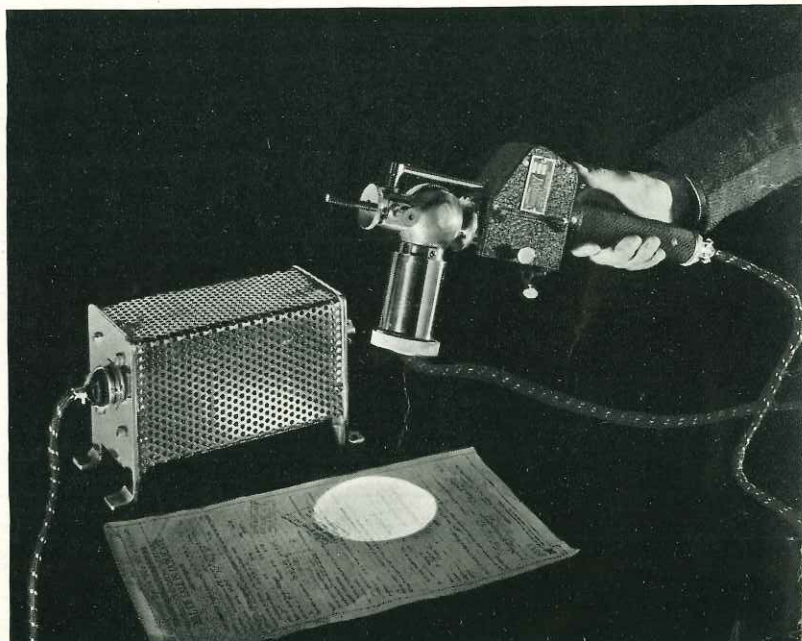
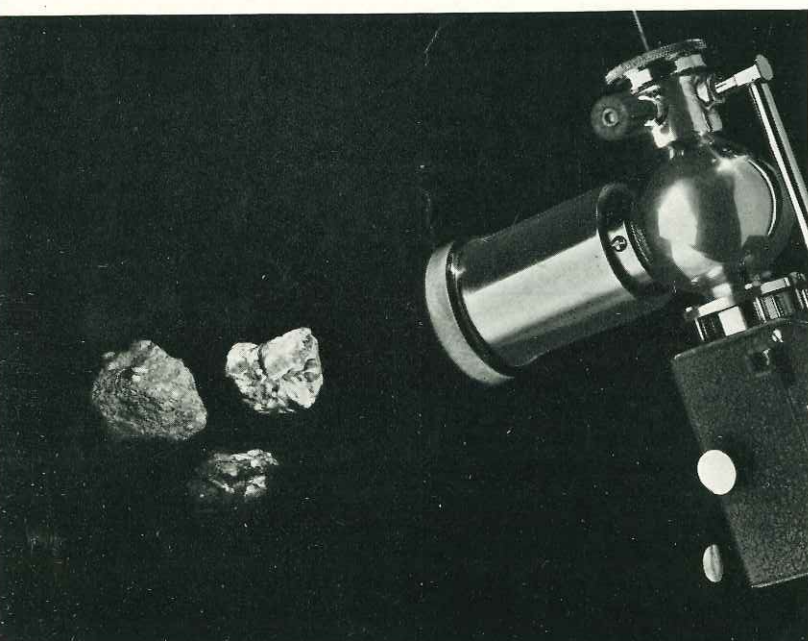
CHARACTER OF RADIATION

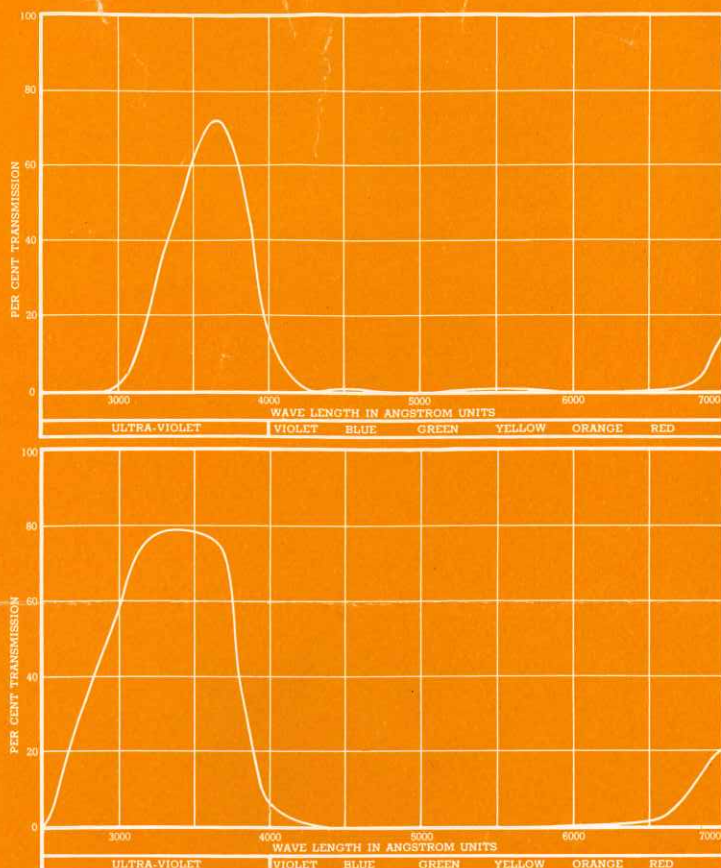
Maximum fluorescence is obtained from the rays of the "EVEREADY FLUORAY" lamp. In addition to being a very powerful source of ultra-violet, the essentially continuous spectrum of the carbon arc assures the presence, in the light source, of all wave lengths to which fluorescent materials respond. Furthermore the energy output is especially high in those bands of radiation most effective in producing fluorescent reaction. Two types of carbons are recommended for use with this lamp, the choice between them at any time being determined by the wave lengths to which the material being examined responds most favorably in fluorescent effect.

No. 67 "Eveready" C carbons are recommended for most uses to which the lamp will be applied. The arc of

the C carbon gives a very high total ultra-violet emission with high output at wave lengths approximating 3000 and 3500 AU. The energy emission from the bare arc and that transmitted by the No. 587 and No. 986 filters are shown by the upper right hand figure on the opposite page.

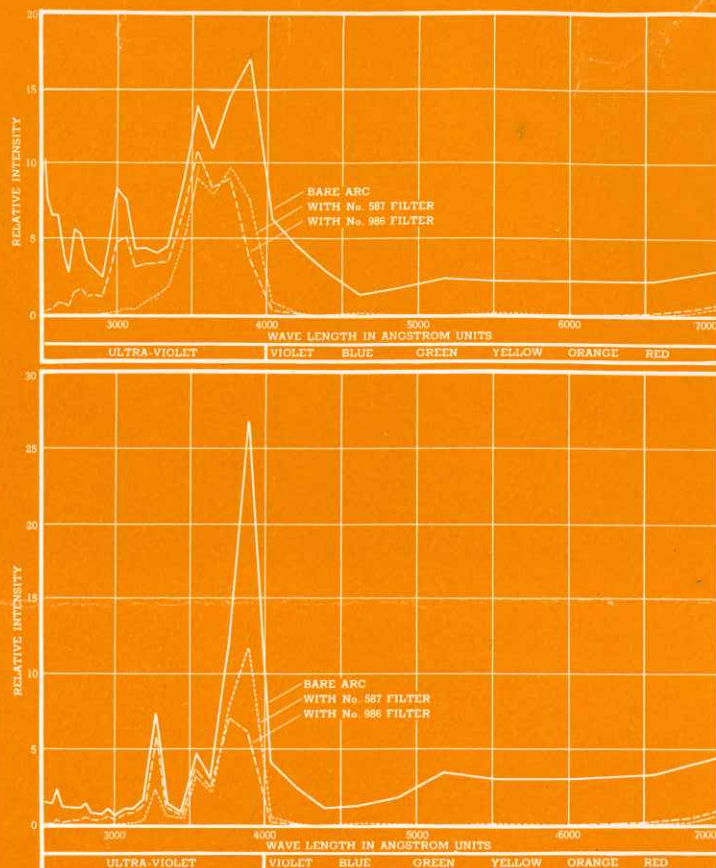
No. 67, copper coated, "Eveready" R carbons, while lower in total ultra-violet emission, give higher output than the C carbon at wave lengths in the vicinity of 3260 and 3880 AU. The lower group of curves at the right hand side of the following page shows the energy emission from the bare arc of this carbon and that transmitted by the No. 587 and No. 986 filters. Most effective use of the emission near 3260 AU will be obtained with the No. 986 filter.





Upper—Transmission of No. 587 FILTER Heat Resisting Red Purple Ultra

Lower—Transmission of No. 986 FILTER Red Purple Corex A



Upper—Distribution of RADIATION from "FLUORAY" Lamp with "Eveready" C Carbons

Lower—Distribution of RADIATION from "FLUORAY" Lamp with Copper Coated "Eveready" R Carbons

Uses for "Fluoray" Ultra Violet Lamp

The wide range of usefulness of this EVEREADY lamp includes a variety of applications requiring a powerful source of ultra-violet essentially free from visible radiation. It is of particular value in producing fluorescent effects, as in the examination of such materials as minerals, chemicals, oils, drugs, organic substances and food products, where fluorescence is a determining characteristic of the material itself or where, by means of fluorescence, adulterants, lack of uniformity or non-identity of specimens can be detected.

The lamp is also admirably adapted to the examination of documents for evidence of alteration, forgery or fraud, disclosing chemical erasures, differences in ink and peculiarities of paper. It is used to detect invisible writing and for many other purposes in the field of crime detection. A number of these lamps are now being used by police departments, crime detection laboratories and other crime prevention agencies, where they have proved of great value in the conduct of criminal investigations. Light weight and ready portability make it possible to take this lamp out of the laboratory to the scene of investigation.

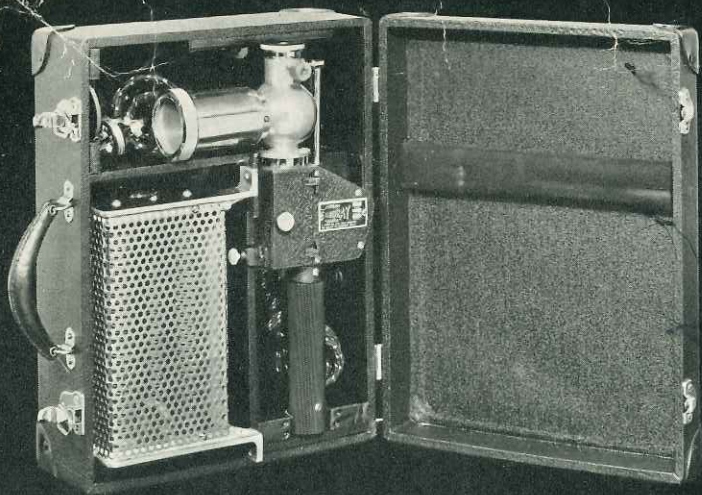
For the industrial and research laboratory this "Fluoray" lamp likewise provides a convenient source of ultra-violet for the inspection and analysis of many materials. One example of such use is the recently developed method of determining, quantitatively, the vitamin G content of dairy products by fluorescence analysis.

Visual Filters

When fluorescent areas under observation do not afford strong fluorescent reaction and the contrast between them and the reflected visible light from the surrounding surface is slight, greater contrast can often be obtained by the use of a filter before the eyes. Such cases sometimes arise in the examination of faded signatures and certain types of mineral specimens. The color of filter giving optimum effect will depend on the colors produced by fluorescence and whether the surrounding surface reflects more strongly the trace of violet or the trace of red light transmitted by the filter in the "Fluoray" lamp. A yellow or light amber filter will absorb reflected violet light and give greater contrast to yellowish-green, yellow and red fluorescence. A light green filter will absorb reflected red light and give greater contrast to green, blue and violet fluorescence.

Surfaces which are effective reflectors of ultra-violet may confuse the vision of the observer as a result of the fluorescence produced within the eye by the reflected ultra-violet. Most amber or green filters will also absorb the reflected ultra-violet sufficiently to eliminate this source of difficulty.

Expensive filters are not required for the purpose here indicated. Tinted sun goggles, which can be obtained at moderate price from various retail outlets, may be found as effective as more expensive filters. It is often advantageous to have a supply of several filters in varied tints, from which to select the one showing greatest contrast.



The "EVEREADY FLUORAY" Lamp is supplied in the attractive, strongly built carrying case illustrated at the left. Complete equipment weighs approximately 13½ pounds and consists of the following items:

Portable Carbon Arc Lamp with enclosing hood.

No. 587 or No. 986 special glass filter.

Ballast resistance unit, self-supporting, ventilated and thoroughly protected.

Two heavy, flexible extension cords for connecting lamp through resistance unit to power supply.

One box of ten No. 67 "Eveready" C carbons. Compact carrying case for complete equipment.

Instructions for Operating "Eveready Fluoray" Lamp

To Replace Carbons Disconnect lamp from power circuit. Turn knob, K, releasing door, D, and exposing lamp mechanism. Release lower and upper carbon set screws, S and T. Depress clutch lever, L, and push lower carbon upward until the stub of upper carbon can be grasped and removed. Withdraw lower carbon through bottom of lamp.

Use No. 67 "Eveready" C carbons or No. 67, copper coated, "Eveready" R carbons. Install upper carbon first, using stub just removed from lower holder or piece 2½ inches or more in length from new carbon. Insert through top of lamp and clamp with set screw, T, so that lower end of carbon is level with or slightly below center of spherical hood, H. Break off protruding portion of upper carbon to prevent contact with live carbon when lamp is operating.

Depress clutch lever, L, and insert new lower carbon, *pointed* end first, through guide clamp, G, and clutch, C. Press lower carbon firmly against tip of upper carbon while guide clamp, G, is pushed down and secured to the carbon by set screw, S, at a point about ⅜ inch from bottom of housing.

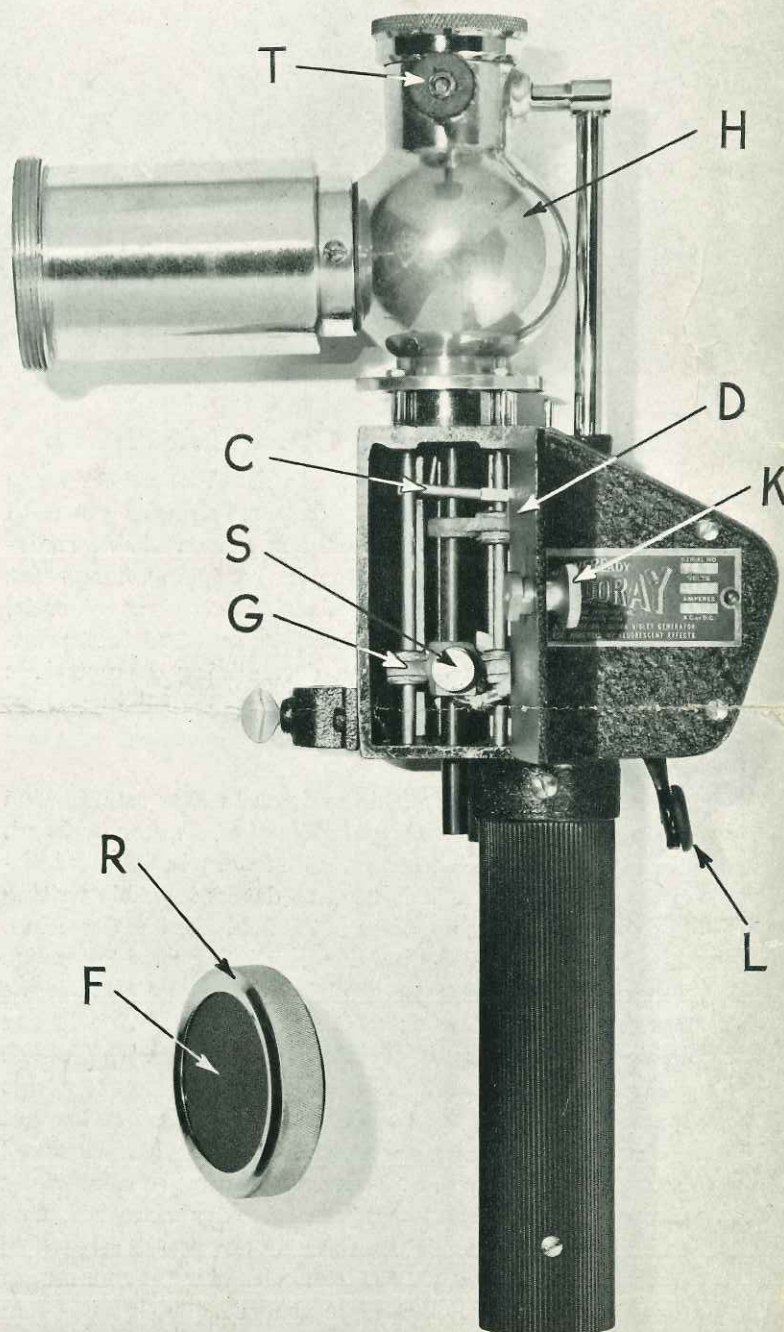
Tighten set screws firmly but not tight enough to crush the carbons.

NEVER PLACE PAINTED END OF CARBON ADJACENT TO ARC.

Cleaning To insure full ultra-violet output the ring, R, holding glass filter, F, should be removed and inner surface of the glass wiped off with a dry cloth each time the lamp is used; also at occasional intervals when the lamp is used for long periods.

Starting Connect lamp to ballast resistance unit by means of flexible lead provided. **NEVER CONNECT LAMP DIRECTLY TO POWER CIRCUIT.** In like manner, connect resistance unit to 110-120 volt power circuit, either A.C. or D.C. Strike the arc by depressing clutch lever, L, and releasing it slowly.

Adjusting Carbons As carbons are consumed, their position should be adjusted occasionally to keep the arc position approximately central in the spherical hood and to prevent contact of guide clamp, G, with clutch C. Position of arc can be observed by looking through filter glass when lamp is burning. Disconnect lamp from power circuit when adjusting carbons.



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